United Nations S/2006/853

Security Council

D:str.: General
30 October 2006

Original: English

Letter dated 1 November 2006 from the Chairman of the Security Council Committee established pursuant to resolution 1718 (2006) concerning the Democratic People's Republic of Korea addressed to the President of the Security Council*

Please find attached a list of items, materials, equipment, goods and technology related to other weapons of mass destruction programmes (see annex). I should be grateful if you would make the necessary arrangements for this list to be issued as a Security Council document.

(*Signed*) Peter **Burian**
Chairman
Security Council Committee established pursuant to resolution 1718 (2006)
concerning the Democratic People's Republic of Korea

* The present document supersedes the communication dated 13 October 2006 from the Permanent Representative of France to the United Nations addressed to the President of the Security Council (S/2006/816).

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Annex

Chemical Precursors

1,3-Bis(2-chloroethylthio)-n-propane	(63905-10-2)
1,4-Bis(2-chloroethylthio)-n-butane	(142868-93-7)
1,5-Bis(2-chloroethylthio)-n-pentane	(142868-94-8)
2-Chloroethanol	(107-07-3)
2-Chloroethylchloromethylsulfide	(2625-76-5)
3-Hydroxy-1-methylpiperidine	(3554-74-3)
3-Quinuclidinol	(1619-34-7)
3-Quinuclidone	(3731-38-2)
Alkyl (Me, Et, n-Pr or i-Pr) phosphonyldifluorides	
Amiton: O,O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate and corresponding alkylated or protonated salts	(78-53-5)
Ammonium bifluoride	(1341-49-7)
Arsenic trichloride	(7784-34-1)
Benzilic acid	(76-93-7)
Bis(2-chloroethylthio)methane	(63869-13-6)
Bis(2-chloroethylthiomethyl)ether	(63918-90-1)
BZ: 3-Quinuclidinyl benzilate	(6581-06-2)
Chloropicrin: Trichloronitromethane	(76-06-2)
Chlorosarin: O-Isopropyl methylphosphonochloridate	(1445-76-7)
Chlorosoman: O-Pinacolyl methylphosphonochloridate	(7040-57-5)
Cyanogen chloride	(506-77-4)
Dialkyl (Me, Et, n-Pr or i-Pr) N,N-dialkyl (Me, Et, n-Pr or i-Pr)-phosphoramidates	
Diethyl ethylphosphonate	(78-38-6)
Diethyl methylphosphonate	(683-08-9)
Diethyl methylphosphonite	(15715-41-0)
Diethyl N,N-dimethylosphoramidate	(2404-03-7)
Diethyl phosphite	(762-04-9)
Diethylaminoethanol	(100-37-8)
Diisopropylamine	(108-18-9)
Dimethyl ethylphosphonate	(6163-75-3)
Dimethyl methylphosphonate	(756-79-6)
Dimethyl phosphite (DMP)	(868-85-9)
Dimethylamine hydrochloride	(506-59-2)

Dimethylamine	(124-40-3)
Ethyldiethanolamine	(139-87-7)
Ethylphosphinyl dichloride	(1498-40-4)
Ethylphosphinyl difluoride	(430-78-4)
Ethylphosphonyl dichloride	(1066-50-8)
Ethylphosphonyl difluoride	(753-98-0)
HN1: Bis(2-chloroethyl)ethylamine	(538-07-8)
HN2: Bis(2-chloroethyl)methylamine	(51-75-2)
HN3: Tris(2-chloroethyl)amine	(555-77-1)
Hydrogen cyanide	(74-90-8)
Hydrogen fluoride	(7664-39-3)
Lewisite 1: 2-Chlorovinyldichloroarsine	(541-25-3)
Lewisite 2: Bis(2-chlorovinyl)chloroarsine	(40334-69-8)
Lewisite 3: Tris(2-chlorovinyl)arsine	(40334-70-1)
Methyl benzilate	(76-89-1)
Methyldiethanolamine	(105-59-9)
Methylphosphinyl dichloride	(676-83-5)
Methylphosphinyl difluoride	(753-59-3)
Methylphosphonic acid	(993-13-5)
Methylphosphonothioic dichloride	(676-98-2)
Methylphosphonyl dichloride (DC)	(676-97-1)
Methylphosphonyl difluoride (DF)	(676-99-3)
Mustard gas: Bis(2-chloroethyl)sulfide	(505-60-2)
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols and corresponding protonated salts*	
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-thiols and corresponding protonated salts	
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethyl-2-chlorides and corresponding protonated salts	
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidic dihalides	
N,N-Diisopropyl-(beta)-aminoethane thiol	(5842-07-9)
N,N-Diisopropyl-(beta)-amino-ethanol	(96-80-0)
N,N-Diisopropyl-(beta)-aminoethyl chloride	(96-79-7)
N,N-Diisopropyl-2-aminoethyl chloride hydrochloride	(4261-68-1)
N,N-Dimethylaminophosphoryl dichloride	(677-43-0)

O-Alkyl (<C10, incl. cycloalkyl) alkyl (Me, Et, n-Pr or i-Pr)-phosphonofluoridates	
e.g. Sarin: O-Isopropyl methylphosphonofluoridate	(107-44-8)
Soman: O-Pinacolyl methylphosphonofluoridate	(96-64-0)
O-Alkyl (<C10, incl. cycloalkyl) N,N-dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidocyanidates	
O-Alkyl (H or <C10, incl. cycloalkyl) O-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr) phosphonites and corresponding alkylated or protonated salts	
O-Alkyl (H or <C10, incl. cycloalkyl) S-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr) phosphonothiolates and corresponding alkylated or protonated salts	
O-Ethyl 2-diisopropylaminoethyl methylphosphonite (QL)	(57856-11-8)
O-Mustard: Bis(2-chloroethylthioethyl)ether	(63918-89-8)
PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene	(382-21-8)
Phosgene: Carbonyl dichloride	(75-44-5)
Phosphorus oxychloride	(10025-87-3)
Phosphorus pentachloride	(10026-13-8)
Phosphorus pentasulphide	(1314-80-3)
Phosphorus trichloride	(7719-12-2)
Pinacolone	(75-97-8)
Pinacolyl alcohol	(464-07-3)
Potassium bifluoride	(7789-29-9)
Potassium cyanide	(151-50-8)
Potassium fluoride	(7789-23-3)
Sesquimustard: 1,2-Bis(2-chloroethylthio)ethane	(3563-36-8)
Sodium bifluoride	(1333-83-1)
Sodium cyanide	(143-33-9)
Sodium fluoride	(7681-49-4)
Sodium sulphide	(1313-82-2)
Sulphur dichloride	(10545-99-0)
Sulphur monochloride	(10025-67-9)
Tabun (GA): O-Ethyl N,N-dimethyl phosphoramidocyanidate	(77-81-6)
Thiodiglycol	(111-48-8)
Thionyl chloride	(7719-09-7)
Triethanolamine	(102-71-6)
Triethanolamine hydrochloride	(637-39-8)
Triethyl phosphite	(122-52-1)

Trimethyl phosphite (TMP)	(121-45-9)
VX: O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate	(50782-69-9)

Dual-Use Chemical Manufacturing Facilities and Equipment and Related Technology

I. MANUFACTURING FACILITIES AND EQUIPMENT

Note 1: The objective of these controls should not be defeated by the transfer of any non-controlled item containing one or more controlled components where the controlled component or components are the principal element of the item and can feasibly be removed or used for other purposes.

N.B.: In judging whether the controlled component or components are to be considered the principal element, governments should weigh the factors of quantity, value, and technological know-how involved and other special circumstances which might establish the controlled component or components as the principal element of the item being procured.

Note 2: The objective of these controls should not be defeated by the transfer of a whole plant, on any scale, which has been designed to produce any CW agent or controlled precursor chemical.

1. Reaction Vessels, Reactors or Agitators

Reaction vessels or reactors, with or without agitators, with total internal (geometric) volume greater than 0.1 m^3 (100 l) and less than 20 m^3 (20000 l), where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from the following materials:

(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) tantalum or tantalum alloys;
(f) titanium or titanium alloys; or
(g) zirconium or zirconium alloys.

Agitators for use in the above-mentioned reaction vessels or reactors, where all surfaces of the agitator or component that come in direct contact with the chemical(s) being processed or contained are made from the following materials:

(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) tantalum or tantalum alloys;
(f) titanium or titanium alloys; or
(g) zirconium or zirconium alloys.

2. Storage Tanks, Containers or Receivers

Storage tanks, containers or receivers with a total internal (geometric) volume greater than 0.1 m^3 (100 l) where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from the following materials:

(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) tantalum or tantalum alloys;
(f) titanium or titanium alloys; or
(g) zirconium or zirconium alloys.

3. Heat Exchangers or Condensers

Heat exchangers or condensers with a heat transfer surface area less than 20 m^2, where all surfaces that come in direct contact with the chemical(s) being processed are made from the following materials:

(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) graphite;
(f) tantalum or tantalum alloys;
(g) titanium or titanium alloys;
(h) zirconium or zirconium alloys;
(i) silicon carbide; or
(j) titanium carbide.

4. Distillation or Absorption Columns

Distillation or absorption columns of internal diameter greater than 0.1 m, where all surfaces that come in direct contact with the chemical(s) being processed are made from the following materials:

(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) graphite;
(f) tantalum or tantalum alloys;
(g) titanium or titanium alloys; or
(h) zirconium or zirconium alloys.

5. Filling Equipment

Remotely operated filling equipment in which all surfaces that come in direct contact with the chemical(s) being processed are made from the following materials:
(a) nickel or alloys with more than 40% nickel by weight; or
(b) alloys with more than 25% nickel and 20% chromium by weight.

6. Valves

Valves, in which all surfaces that come in direct contact with the chemical(s) being produced, processed, or contained are made from the following materials:
(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) tantalum or tantalum alloys;
(f) titanium or titanium alloys; or
(g) zirconium or zirconium alloys.

7. Multi-Walled Piping

Multi-walled piping incorporating a leak detection port, in which all surfaces that come in direct contact with the chemical(s) being processed or contained are made from the following materials:
(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) graphite;
(f) tantalum or tantalum alloys;
(g) titanium or titanium alloys; or
(h) zirconium or zirconium alloys.

8. Pumps

Pumps with manufacturer's specified maximum flow-rate greater than 0.6 m3/h, or vacuum pumps with manufacturer's specified maximum flow-rate greater than 5 m^3/h (under standard temperature (273 K (0o C)) and pressure (101.3 kPa) conditions), in which all surfaces that come into direct contact with the chemical(s) being processed are made from any of the following materials:
(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight;
(c) fluoropolymers;
(d) glass or glass-lined (including vitrified or enamelled coating);
(e) graphite;
(f) tantalum or tantalum alloys;

(g) titanium or titanium alloys;
(h) zirconium or zirconium alloys;
(i) ceramics; or
(j) ferrosilicon.

9. Incinerators

Incinerators designed to destroy CW agents, controlled precursors or chemical munitions, having specially designed waste supply systems, special handling facilities, and an average combustion chamber temperature greater than 1000o C, in which all surfaces in the waste supply system that come into direct contact with the waste products are made from or lined with the following materials:
(a) nickel or alloys with more than 40% nickel by weight;
(b) alloys with more than 25% nickel and 20% chromium by weight; or
(c) ceramics.

II. TOXIC GAS MONITORING SYSTEMS AND DETECTORS

Toxic gas monitoring systems and dedicated detectors:
(a) designed for continuous operation and usable for the detection of chemical warfare agents or controlled precursors at concentrations of less than 0.3 mg/m³; or
(b) designed for the detection of cholinesterase-inhibiting activity.

III. RELATED TECHNOLOGY

The transfer of 'technology', including licenses, directly associated with:
(a) CW agents;
(b) controlled precursors; or
(c) controlled dual-use equipment items,
to the extent permitted by national legislation.

Technical assistance is subject to control. Controls on 'technology' transfer, including 'technical assistance', do not apply to information 'in the public domain' or to 'basic scientific research' or the minimum necessary information for patent application.

The approval for export of any controlled item of dual-use equipment also authorizes the export to the same end-user of the minimum 'technology' required for the installation, operation, maintenance or repair of that item.

Definition of Terms

'Technology': Specific information necessary for the 'development', 'production' or 'use' of a product. The information takes the form of 'technical data' or 'technical assistance'.

'Basic scientific research': Experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective.

'Development': 'Development' is related to all phases before 'production' such as:
(a) design;
(b) design research;
(c) design analysis;
(d) design concepts;
(e) assembly of prototypes;
(f) pilot production schemes;
(g) design data;
(h) process or transforming design data into a product;
(i) configuration design;
(j) integration design; and/or
(k) layouts.

'In the public domain': 'In the public domain', as it applies herein, means technology that has been made available without restrictions upon its further dissemination. (Copyright restrictions do not remove technology from being in the public domain).

'Production': Production means all production phases such as:
(a) construction;
(b) production engineering;
(c) manufacture;
(d) integration;
(e) assembly (mounting);
(f) inspection;
(g) testing; and/or
(h) quality assurance.

'Technical assistance': May take forms, such as: instruction, skills, training, working knowledge, consulting services.

N.B. 'Technical assistance' may involve transfer of 'technical data'.

'Technical data': May take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories.

'Use': Operation, installation (including on-site installation), maintenance (checking), repair, overhaul or refurbishing.

'Export': An actual shipment or transmission of controlled items out of the country. This includes transmission of technology by electronic media, fax or telephone.

Biological Agents

Viruses

Chikungunya virus
Congo-Crimean haemorrhagic fever virus
Dengue fever virus
Eastern equine encephalitis virus
Ebola virus
Hantaan virus
Junin virus
Lassa fever virus
Lymphocytic choriomeningitis virus
Machupo virus
Marburg virus
Monkey pox virus
Rift Valley fever virus
Tick-borne encephalitis virus (Russian Spring-Summer encephalitis virus)
Variola virus
Venezuelan equine encephalitis virus
Western equine encephalitis virus
White pox
Yellow fever virus
Japanese encephalitis virus
Kyasanur Forest virus
Louping ill virus
Murray Valley encephalitis virus
Omsk haemorrhagic fever virus
Oropouche virus
Powassan virus
Rocio virus
St Louis encephalitis virus

Rickettsiae

Coxiella burnetii
Bartonella quintana (Rochalimea quintana, Rickettsia quintana)
Rickettsia prowazeki
Rickettsia rickettsii

Bacteria

Bacillus anthracis
Brucella abortus
Brucella melitensis
Brucella suis
Chlamydia psittaci
Clostridium botulinum
Francisella tularensis
Burkholderia mallei (Pseudomonas mallei)
Burkholderia pseudomallei (Pseudomonas pseudomallei)
Salmonella typhi
Shigella dysenteriae
Vibrio cholerae
Yersinia pestis
Clostridium perfringens, epsilon toxin producing types
Enterohaemorrhagic Escherichia coli, serotype O157 and other verotoxin producing serotypes

Toxins as follow and subunits thereof [1]

Botulinum toxins[2]
Clostridium perfringens toxins
Conotoxin
Ricin
Saxitoxin
Shiga toxin
Staphylococcus aureus toxins
Tetrodotoxin
Verotoxin
Microcystin (Cyanginosin)
Abrin
Cholera toxin
T-2 toxin
HT-2 toxin

[1] Excluding immunotoxins.
[2] Excluding botulinum toxins and conotoxins in product form meeting all of the following criteria:
- are pharmaceutical formulations designed for testing and human administration in the treatment of medical conditions;
- are pre-packaged for distribution as clinical or medical products; and,
- are authorized by a state authority to be marketed as clinical or medical products.

Genetically-modified Organisms

1. Genetically modified organisms or genetic elements from microorganisms in the list that contain nucleic acid sequences associated with pathogenicity.
2. Genetically modified organisms or genetic elements that contain nucleic acid sequences coding for any of the toxins on the list.

Plant Pathogens

Bacteria
Xanthomonas albilineans
Xanthomonas campestris pv. citri
Xanthomonas oryzae pv. oryzae (Pseudomonas campestris pv. oryzae)

Fungi
Colletotrichum coffeanum var. virulans (Colletotrichum kahawae)
Cochliobolus miyabeanus (Helminthosporium oryzae)
Microcyclus ulei (syn. Dothidella ulei)
Puccinia graminis (syn. Puccinia graminis f. sp. tritici)
Puccinia striiformis (syn. Puccinia glumarum)
Pyricularia grisea / Pyricularia oryzae

Genetically-modified Organisms

Genetically modified organisms or genetic elements from microorganisms in the list that contain nucleic acid sequences associated with pathogenicity.

Animal Pathogens

Viruses

African swine fever virus
Avian influenza virus 2
Bluetongue virus
Foot and mouth disease virus
Goat pox virus
Herpes virus (Aujeszky's disease)
Hog cholera virus (synonym: swine fever virus)
Lyssa virus
Newcastle disease virus
Peste des petits ruminants virus
Porcine enterovirus type 9 (synonym: swine vesicular disease virus)
Rinderpest virus

Sheep pox virus
Teschen disease virus
Vesicular stomatitis virus

Bacteria
Mycoplasma mycoides

Genetically-modified Organisms

Genetically modified organisms or genetic elements from microorganisms in the list that contain nucleic acid sequences associated with pathogenicity.

Dual-Use Biological Equipment and Related Technology

1. Equipment

1. Complete containment facilities at P3 or P4 containment level:

Complete containment facilities that meet the criteria for P3 or P4 (BL3, BL4, L3, L4) containment as specified in the WHO Laboratory Biosafety manual (2nd edition, Geneva, 1993) should be subject to export control.

2. Fermenters:

Fermenters capable of cultivation of pathogenic micro-organisms, viruses or for toxin production, without the propagation of aerosols, having a capacity of 100 litres or greater. Fermenters include bioreactors, chemostats and continuous-flow systems.

3. Centrifugal Separators:

Centrifugal separators capable of the continuous separation of pathogenic micro-organisms, without the propagation of aerosols, and having all the following characteristics:
- one or more sealing joints within the steam containment area;
- a flow rate greater than 100 litres per hour;
- components of polished stainless steel or titanium;
- capable of in-situ steam sterilisation in a closed state.

Technical note: Centrifugal separators include decanters.

4. Cross (tangential) Flow Filtration Equipment:

Cross (tangential) flow filtration equipment capable of continuous separation of pathogenic micro-organisms, viruses, toxins or cell cultures, without the propagation of aerosols, having all the following characteristics:

- a total filtration area equal to or greater than 5 square metres;
- capable of being steam-sterilized without preliminary dismantling.

5. Freeze-drying Equipment:

Steam sterilisable freeze-drying equipment with a condenser capacity of 50 kgs of ice or greater in 24 hours and less than 1000 kgs of ice in 24 hours.

6. As follows:
(a) Protective suits with full or partial ventilation.
(b) Class III biological safety cabinets or isolators with similar performance standards (e.g. flexible isolators, dry boxes, anaerobic chambers, glove boxes, or laminar flow hoods (closed with vertical flow)).

7. Aerosol inhalation chambers:

Chambers designed for aerosol challenge testing with micro-organisms, viruses or toxins and having a capacity of 1 cubic meter or greater.

8. Complete spraying systems specially designed or modified for dissemination of biological agents.

9. Equipment for the micro-encapsulation of live micro-organisms and toxins in the range of 1-10 um particle size, specifically:
(a) interfacial polycondensors;
(b) phase separators.

10. Fermenters of less than 20 litre capacity with special emphasis on aggregate orders or designs for use in combined systems.

11. Conventional or turbulent air-flow clean-air rooms and self-contained fan-HEPA filter units that may be used for P3 or P4 (BL3, BL4, L3, L4) containment facilities.

II. Related Technology

The transfer of 'technology' for 'development' or 'production' of:
(a) controlled biological agents; or
(b) controlled dual-use biological equipment items.

Controls on 'technology' transfer do not apply to information 'in the public domain' or to 'basic scientific research' or the minimum necessary information for patent application.

The approval for export of any controlled item of dual-use equipment also authorizes the export to the same end-user of the minimum 'technology' required for the installation, operation, maintenance, or repair of that item.

Definition of Terms

'Basic scientific research': Experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective.

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(b) design research;
(c) design analysis;
(d) design concepts;
(e) assembly of prototypes;
(f) pilot production schemes;
(g) design data;
(h) process or transforming design data into a product;
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(a) construction;
(b) production engineering;
(c) manufacture;
(d) integration;
(e) assembly (mounting);
(f) inspection;
(g) testing; and/or
(h) quality assurance.

'Technical assistance': May take forms, such as: instruction, skills, training, working knowledge, consulting services. 'Technical assistance' may involve transfer of 'technical data'.

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'Technology': Specific information necessary for the 'development', 'production', or 'use' of a product. The information takes the form of 'technical data' or 'technical assistance'.

'Use': Operation, installation, (including on-site installation), maintenance, (checking), repair, overhaul or refurbishing.